

REMARKS

The Office Action mailed October 23, 2002 has been reviewed and carefully considered. Claims 5 and 8 are pending in this application, with claim 5 being the only independent claim. Reconsideration of the above-identified application in view of the following remarks is respectfully requested.

The Examiner and Applicants' representative held a telephone interview on January 23, 2003 discussing U.S. Patent No. 5,509,460 (Chun) and independent claim 5 of the present application. More specifically, the measuring of the surface temperature as recited in independent claim 5 and the determination of the solid/liquid interface disclosed by Chun were compared. The comparison is further discussed below.

In the Office Action mailed October 23, 2002, claims 5 and 8 stand rejected under 35 U.S.C. §103 as unpatentable over Simsek, "Dynamic Simulation of Dual-Line Continuous Strip Processing Operations" in view of U.S. Patent No. 5,509,460 (Chun).

Independent claim 5 recites "during the material flow of continuous-cast slabs in the transport and processing paths, measuring a surface temperature of the continuous-cast slab over time" and "controlling the material flow of the continuous-cast slab in the transport and processing paths between the continuous-casting installation and rolling mills via a slab-monitoring system of the continuous-casting installation using the measured surface temperature of the continuous-cast slab and the amount of heat and the temperature profile determined in said step b. as an input to the slab-monitoring system".

Simsek discloses a simulation of dual-line continuous strip processing operations used for generating designs and analyzing operating strategies for a proposed casting installation. In other words, Simsek discloses a design tool and is not used during actual operation of a plant to

monitor operation. Simsek discloses inputting parameters and running a simulation to determine calculated characteristics of a slab during movement through the simulated continuous strip processing facility. Throughout the article, Simsek continually refers to simulation and not the monitoring of real time operation. Accordingly, Simsek fails to teach measuring actual temperatures or controlling the material flow of the continuous-cast slab in the transport and processing paths of a casting installation.

Chun discloses a solid/liquid interface detection in continuous casting processes by gamma-ray attenuation. According to Chun, gamma rays are passed through a partially solidified strand and a detector is used to determine the liquid metal/ solid metal interface by relying on the different gamma radiation attenuation characteristics of the solid metal and liquid metal.

Independent claim 5 is allowable over Simsek in view of Chun for the following reasons: (1) There is no motivation to combine the simulation program of Simsek with the solid/liquid interface detection system disclosed by Chun and (2) even if they were combined, both Simsek and Chun fail to disclose measuring the surface temperature of the cast strand.

Regarding the first reason, a program designed to run simulations of a casting facility for the purposes of determining design parameters is not necessarily capable of monitoring actual parameters for processing the actual parameters and generating control signals to control the operation in response to the actual measured parameters. Rather, a simulator simply predicts what the actual parameters should be based on calculations. Accordingly, there is no motivation to combine the control system of Chun with the simulator of Simsek. In fact, Chun actually teaches away from using simulators in col. 1, lines 32-49.

Regarding the second reason, Simsek fails to disclose measuring a surface temperature as discussed above, because the device disclosed by Simsek is a simulator which does

not monitor actual conditions. Chun discloses a detector for detecting the solid/liquid interface at the exit of the strand from the cast mold. While it may be possible to calculate the outer surface temperature based on the solid/liquid interface, the starting temperature of the melt, and the cooling capacity of the cooling devices, it is respectfully submitted that Chun does not measure the outer surface temperature as recited in independent claim 5. In fact, Chun teaches that the outer temperature of the strand is not the critical variable because the solid/liquid interface depends on many other factors including the rate of withdrawal of the strand and the temperature of the melt (see col. 1, lines 32-49). Chung teaches that the desired solidification front profile and position is controlled in response to the detection of the liquid metal/solid metal interface. Therefore, Chun fails to teach or suggest measuring a surface temperature as recited in independent claim 5. Furthermore, since Chun teaches away from using the outer surface temperature for determining characteristics of the slab, Chun also fails to teach or suggest the limitations of step (c) "controlling the material flow of the continuous-cast slab in the transport and processing paths between the continuous-casting installation and rolling mills via a slab-monitoring system of the continuous-casting installation using the measured surface temperature of the continuous-cast slab", as recited in independent claim 5.

In view of the above remarks, it is respectfully submitted that independent claim 5 is allowable over Simsek in view of Chun. Claim 8, being dependent on independent claim 5, is allowable for at least the same reasons as independent claim 5.

The application is deemed to be in condition for allowance and notice to that effect is respectfully solicited.

It is believed that no fees or charges are required at this time in connection with the present application; however, if any fees or charges are required at this time, they may be charged to our Patent and Trademark Office Deposit Account No. 03-2412.

Respectfully submitted,

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